

## PCT

INTERNATIONAL PRELIMINARY EXAMINATION REPORT  
(PCT Article 36 and Rule 70)

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Applicant's or agent's file reference PA 4493 PCT.INT	FOR FURTHER ACTION <span style="float: right;">See Notification of Transmittal of International Preliminary Examination Report (Form PCT/PEA/416)</span>	
International application No. PCT/GB 03/01619	International filing date (day/month/year) 15.04.2003	Priority date (day/month/year) 28.06.2002
International Patent Classification (IPC) or both national classification and IPC B21K1/60		
Applicant TEXTRON FASTENING SYSTEMS LIMITED et al.		

1. This international preliminary examination report has been prepared by this International Preliminary Examining Authority and is transmitted to the applicant according to Article 36.
  
2. This REPORT consists of a total of 4 sheets, including this cover sheet.
 

This report is also accompanied by ANNEXES, i.e. sheets of the description, claims and/or drawings which have been amended and are the basis for this report and/or sheets containing rectifications made before this Authority (see Rule 70.16 and Section 607 of the Administrative Instructions under the PCT).

These annexes consist of a total of 5 sheets.
  
3. This report contains indications relating to the following items:
  - I  Basis of the opinion
  - II  Priority
  - III  Non-establishment of opinion with regard to novelty, inventive step and industrial applicability
  - IV  Lack of unity of invention
  - V  Reasoned statement under Rule 66.2(a)(ii) with regard to novelty, inventive step or industrial applicability; citations and explanations supporting such statement
  - VI  Certain documents cited
  - VII  Certain defects in the international application
  - VIII  Certain observations on the international application

Date of submission of the demand 08.12.2003	Date of completion of this report 21.09.2004
Name and mailing address of the international preliminary examining authority:  European Patent Office D-80298 Munich Tel. +49 89 2399 - 0 Tx: 523656 epmu d Fax: +49 89 2399 - 4465	Authorized Officer  Antoniadis, F Telephone No. +49 89 2399-2392



INTERNATIONAL PRELIMINARY  
EXAMINATION REPORT

International application No. PCT/GB 03/01619

**I. Basis of the report**

1. With regard to the **elements** of the international application (*Replacement sheets which have been furnished to the receiving Office in response to an invitation under Article 14 are referred to in this report as "originally filed" and are not annexed to this report since they do not contain amendments (Rules 70.16 and 70.17)*):

**Description, Pages**

1-6 as originally filed

**Claims, Numbers**

1-12 received on 30.06.2004 with letter of 14.05.2004

**Drawings, Sheets**

1/13, 4/13-13/13 as originally filed

2/13, 3/13 received on 30.06.2004 with letter of 14.05.2004

2. With regard to the **language**, all the elements marked above were available or furnished to this Authority in the language in which the international application was filed, unless otherwise indicated under this item.

These elements were available or furnished to this Authority in the following language: , which is:

- the language of a translation furnished for the purposes of the international search (under Rule 23.1(b)).
- the language of publication of the international application (under Rule 48.3(b)).
- the language of a translation furnished for the purposes of international preliminary examination (under Rule 55.2 and/or 55.3).

3. With regard to any **nucleotide and/or amino acid sequence** disclosed in the international application, the international preliminary examination was carried out on the basis of the sequence listing:

- contained in the international application in written form.
- filed together with the international application in computer readable form.
- furnished subsequently to this Authority in written form.
- furnished subsequently to this Authority in computer readable form.
- The statement that the subsequently furnished written sequence listing does not go beyond the disclosure in the international application as filed has been furnished.
- The statement that the information recorded in computer readable form is identical to the written sequence listing has been furnished.

4. The amendments have resulted in the cancellation of:

- the description, pages:
- the claims, Nos.:
- the drawings, sheets:

## INTERNATIONAL PRELIMINARY EXAMINATION REPORT

International application No. PCT/GB 03/01619

5.  This report has been established as if (some of) the amendments had not been made, since they have been considered to go beyond the disclosure as filed (Rule 70.2(c)).

*(Any replacement sheet containing such amendments must be referred to under item 1 and annexed to this report.)*

6. Additional observations, if necessary:

**V. Reasoned statement under Article 35(2) with regard to novelty, inventive step or industrial applicability; citations and explanations supporting such statement**

## 1. Statement

Novelty (N) Yes: Claims 1-12  
No: Claims

Inventive step (IS) Yes: Claims 4,5,8-10,12  
No: Claims 1-3,6,7,11

**Industrial applicability (IA)** Yes: Claims 1-12  
No: Claims

## 2. Citations and explanations

**see separate sheet**

INTERNATIONAL PRELIMINARY  
EXAMINATION REPORT - SEPARATE SHEET

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Re Item V

**Reasoned statement under Article 35(2) with regard to novelty, inventive step or industrial applicability; citations and explanations supporting such statement**

The "squeezing of a tubular blank between a mandrel and a plurality of external members provided with suitably shaped surfaces engaging the external wall face of the blank" is known from US-A-5894753. In this document the squeezing is achieved by the effective decrease in diameter of the engagement of the suitably shaped surfaces on the external members with the external tubular wall face of the blank.

The subject-matter of claim 1 does therefore not involve an inventive step (Art. 33 PCT).

Dependent claims 2 and 3 do not contain any additional features which, in combination with the features of claim 1 meet the requirements of Art. 33 PCT with respect to inventive step.

The features of claims 4 and 12, that the the external members are closed so as to leave a space between each member and the next, thereby to accomodate the protrusions from the grooves, are not known in the available prior art.

Hence claims 4 and 12 meet the requirements of Art. 33 PCT.

Claims 5, and 8-10 as far as they are dependent from claim 4 meet also the requirements of Art. 33 PCT.

The subject-matter of claim 11 does not involve an inventive step, since the method steps for the production of the tubular fastener cannot be recognised on the produced fastener and are therefore not binding features for the product.

Claims

1. A method of forming a radially expandable externally grooved tubular fastener from metal, comprising the steps of:-
  - 5 providing a suitable tubular blank having a tubular wall;
  - 10 and squeezing the tubular wall between an internal member with a surface which engages the internal tubular wall face of the blank and a plurality of external members provided with suitably shaped surfaces engaging the external tubular wall face of the blank;
  - 15 thereby to form grooves on the external tubular wall face of the blank; in which the squeezing is achieved by the effective decrease in diameter of the engagement of the suitably shaped surfaces of the external members with the external tubular wall face of the blank.
2. A method as claimed in claim 1, in which the squeezing is achieved by both the effective increase in diameter of the engagement of the internal tubular member with the internal tubular wall face of the blank and the effective decrease in the diameter of engagement of the suitably shaped surfaces of the external members with the external tubular wall face of the blank; and in which the external members are closed on to the external wall face of the tubular blank to form grooves thereon as aforesaid  
25 and then remain in the same spatial relationship with each other until they are withdrawn as to release the blank.
3. A method as claimed in claim 1 or claim 2, in which the external members when closed on to the external tubular wall face of the blank form grooves thereon as aforesaid and also form a plurality of radially extending lugs or other protrusions thereon.  
30
4. A method as claimed in claim 3, in which the external members are closed on to the external tubular wall face of the blank so as to leave a space between each member and the next, thereby to accommodate the protrusions from the grooves.  
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5. A method as claimed in claim 4, in which the opposed walls of adjacent external members which define the spaces between them also assist in forming the protrusions.
- 5 6. A method as claimed in claim 2, in which the external members are first progressively closed on to the external tubular wall face of the blank to as to engage it as aforesaid and at least partially form grooves in it, and the internal member engages the internal tubular wall face of the blank with an increasing diameter, thereby to assist in the formation of the grooves.
- 10 7. A method as claimed in claim 2, in which the internal member has an external diameter which varies along its length, and is moved axially with respect to the tubular blank thereby to increase the diameter which engages the internal tubular wall face of the blank as aforesaid.
- 15 8. A method as claimed in any of claims 1 to 7, in which the grooves on the external tubular wall face of the blank are in the form of circumferential grooves.
- 20 9. A method as claimed in any of claims 1 to 7, in which the grooves on the external tubular wall face of the blank are in the form of a screw thread.
10. A method as claimed in any of claims 1 to 7, in which the grooves on the external tubular wall of the blank are in the form of longitudinal grooves.
- 25 11. A fastener formed by a method as claimed in any of the preceding claims.
12. A method of forming a radially expandable externally grooved tubular fastener from metal, comprising the steps of:-
- 30 providing a suitable tubular blank having a tubular wall;
- 35 and squeezing the tubular wall between an internal member with a surface which engages the internal tubular wall face of the blank and a plurality of external members provided with suitably shaped surfaces engaging the external tubular wall face of the blank;

thereby to form grooves on the external tubular wall face of the blank and wherein the external members are closed on to the external tubular wall face of the blank so as to leave a space between each member and the next, thereby to accommodate the protrusions from the grooves

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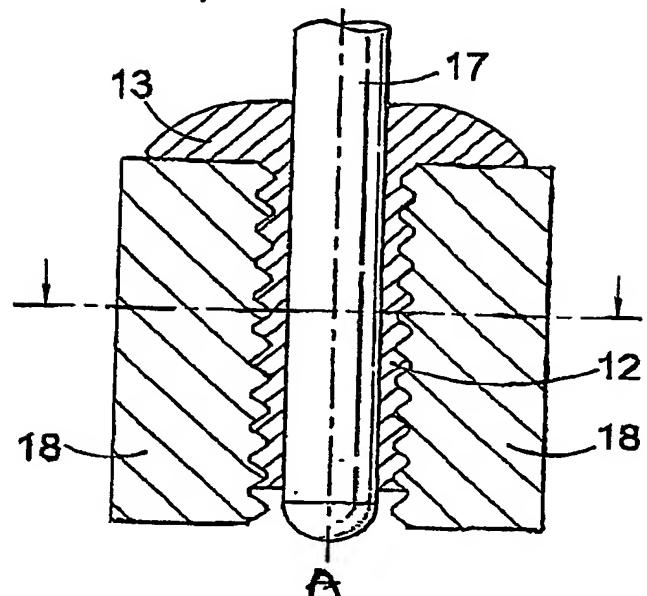


Fig. 1E

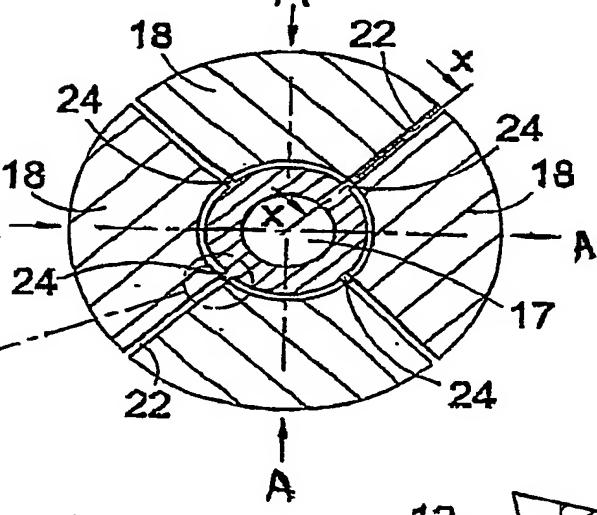


Fig. 1F

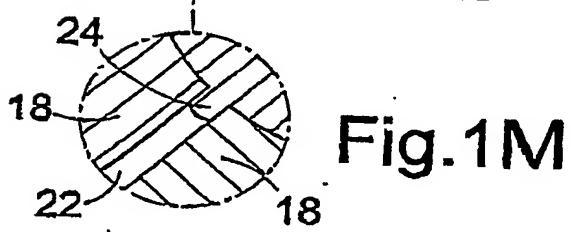


Fig. 1M

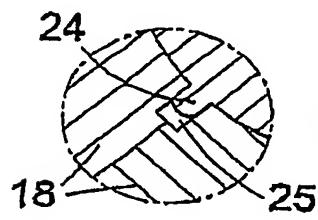


Fig. 1N

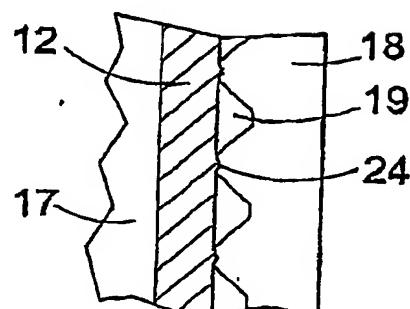


Fig. 1L

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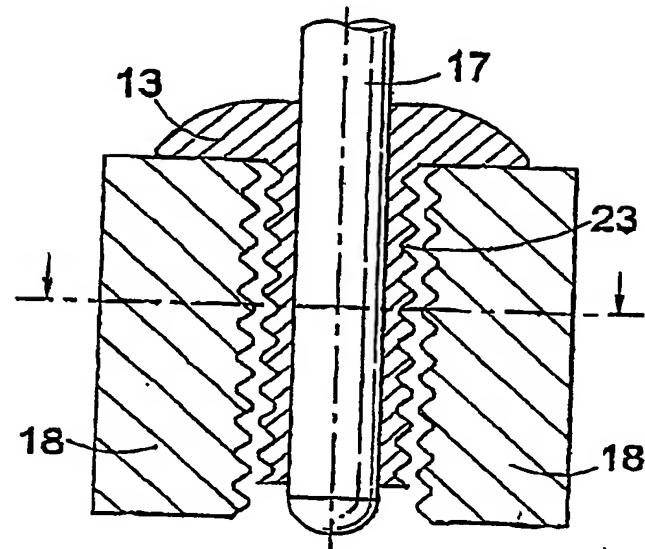


Fig.1G

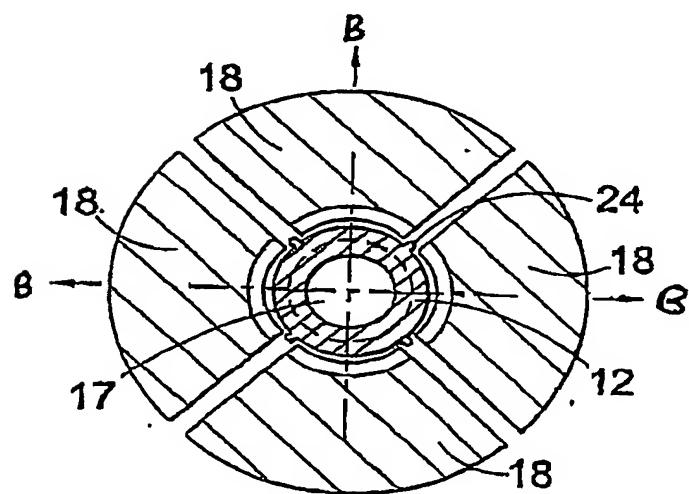


Fig.1H